



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/066,788	02/06/2002	Timothy Warner	02023	4514

23338 7590 01/25/2006

DENNISON, SCHULTZ, DOUGHERTY & MACDONALD  
1727 KING STREET  
SUITE 105  
ALEXANDRIA, VA 22314

EXAMINER

MORILLO, JANELL COMBS

ART UNIT PAPER NUMBER

1742

DATE MAILED: 01/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 10/066,788	<b>Applicant(s)</b> WARNER, TIMOTHY	
	<b>Examiner</b> Janelle Combs-Morillo	<b>Art Unit</b> 1742	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 05 August 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-7,9-12 and 25-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7,9-12 and 25-30 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 11 and 12 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 11 (which is dependent on claim 1) mentions the equivalent time at 120°C is 100-250 hours, which is broader than independent claim 1. Claim 12 contains a similar limitation.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-6, 9-12, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chakrabarti et al (US 2002/0121319 A1).

Chakrabarti et al teaches a process for manufacturing Al-Zn-Cu-Mg alloy products of high compressive strength (see Table 3) by casting an ingot, homogenizing, extruding, solution heat treating, quenching, cold stretching, and aging to obtain high compressive strength (see [0054], [0022]). Chakrabarti et al said process can be used for Al-Zn-Cu-Mg alloy products made into upper wing structures of a commercial aircraft wing, which are compressively loaded (see [0004]), thereby requiring high compressive yield strengths. Chakrabarti et al teaches an

Art Unit: 1742

aging practice that “won’t unduly sacrifice strength properties while still improving the corrosion resistance of high performance, 7XXX aluminum alloys” (see [0022]). Chakrabarti et al teaches the use of 7XXX alloys, such as 7055 (see Table 1), to achieve compressive yield strengths about 10-15% higher than previous attempts (see [0020]). Broadly, Chakrabarti et al teaches performing said process on alloys comprising: 6-10% Zn, 1.2-1.9% Mg, 1.2-2.2% Cu, and one or more of: up to 0.4% Zr, up to 0.4% Sc, and up to 0.3% Hf (see [0023]).

In Table 3, Chakrabarti et al teaches a compressive yield strength of 73.2 ksi in the L direction. Chakrabarti does not mention that this is the maximum compression YS in the L direction. However, because Chakrabarti et al teaches that compressive yield strength is a result effective variable (dependent on alloy composition and aging treatment, see Table 3 and [0020]), and because Chakrabarti et al teaches a substantially overlapping alloy composition as well as aging cycle, it is held to be within the level of one of ordinary skill in the art to determine the optimum or workable ranges of said variable (that is, to obtain the maximum compression YS in the L direction), given the disclosure of Chakrabarti.

Changes in temperature, concentrations, or other process conditions of an old process does not impart patentability unless the recited ranges are critical, i.e. they produce a new and unexpected result. However, said parameter must first be recognized as a result-effective variable, i.e., a variable which achieves a recognized result, before the determination of the optimum or workable ranges of said variable might be characterized as routine experimentation. *In re Antonie*, 559 F.2d 618, 195 USPQ 6 (CCPA 1977) See also *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Art Unit: 1742

Concerning claims 2-6, as stated above, Chakrabarti et al teaches an overlapping Al-Zn-Mg-Cu alloy composition. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in Chakrabarti because Chakrabarti finds that the prior art composition in the entire disclosed range has a suitable utility.

Concerning the particular aging steps of claims 9-12, Chakrabarti et al teaches aging in 2 or 3 steps- aging at a first temperature of 230-250°F for 2-18 hrs (see [0017]), aging at a second temperature of 305-325°F for 6-18 hr (see [0018]), and optionally aging at a third temperature of 230-250°F for 2-18 hrs (see [0019]), which overlaps the presently claimed aging temperature ranges and equivalent times. The minimum equivalent time taught by Chakrabarti et al for a 3 stage aging process is approximately >154.4 hrs, while the equivalent time for a 2 stage aging process is approximately >153.7 hrs (which is a close approximation of the presently claims “about 150 h” in instant claim 9). These values were calculated by summing the individual  $t_{eq}$  (as set forth in the equation given by the specification and recited below) of the three (or two) minimum times and temperatures taught by the prior art-  $t_{eq}(\text{total})=t_{eq1}+t_{eq2}+t_{eq3}$

first aging	$T_1=230^\circ\text{F}$	$t_1=2\text{hr}$	$t_{eq1}=0.7\text{hrs,}$
second aging	$T_2=310^\circ\text{F}$	$t_2=6\text{hr}$	$t_{eq2}=153\text{ hrs,}$
third aging	$T_3=230^\circ\text{F}$	$t_3=2\text{hr}$	$t_{eq3}=0.7$
$t_{eq\text{ total}}=154.4\text{ hrs}$			

$$t_{eq} = \frac{t \left( e^{-16,000/T} \right)}{e^{-16,000/T_{ref}}}$$

Because Chakrabarti teaches substantially overlapping aging time and temperature ranges, it is held that Chakrabarti has created a prima facie case of obviousness of the presently claimed invention.

Concerning claims 26, 27, though Chakrabarti does not specify a metallurgical temper between two known temper designations, because Chakrabarti teaches ageing times and temperature ranges that overlap the presently claimed aging time and temperature ranges, then the metallurgical temper designation would necessarily be the same.

4. Claims 1-7, 9-10, and 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ponchel et al (US 4,954,188).

Ponchel teaches a method of producing a high strength Al-Zn-Cu-Mg alloy by casting an ingot (column 3 line 24), homogenizing, hot working, solution heat treating (column 3 lines 25-26, 31, 45), and aging in a single stage at 270-285°F for 6-30 hrs (abstract, for a  $t_{eq}$  = 20-227 hrs), which overlaps the presently claimed method aging time and temperature equivalence. Ponchel teaches said alloy comprises (in weight%): 5.9-8.2% Zn, 1.5-4.0% Mg, 1.5-3.0% Cu, and 0.5% max. Zr, Mn, Ti, balance aluminum (abstract, column 7 lines 12-14). Ponchel teaches high compressive strengths of up to 94.1 ksi can be achieved (see Table III). Peak compressive strength is achieved by Ponchel for Ex. 6 with an aging treatment of 24hrs at 275°F, which is equivalent to  $t_{eq}$  = 107. Ponchel teaches that the tensile properties increase but the compressive strength decreases for an aging treatment of 24 hrs at 300°F, which is equivalent to  $t_{eq}$  = 390 (outside the present invention). Ponchel teaches that compressive strength is dependent on aging time and temperature.

Art Unit: 1742

Because Ponchel et al teaches a substantially overlapping alloy composition as well as aging cycle, it is held to be within the level of one of ordinary skill in the art to determine the optimum or workable ranges of said variable (that is, to obtain the maximum compression YS in the L direction), given the disclosure of Ponchel. (Additionally, as stated above, Ponchel teaches an example maximizing the compression YS).

Because Ponchel teaches substantially overlapping aging time and temperature ranges, it is held that Ponchel has created a prima facie case of obviousness of the presently claimed invention.

Concerning claims 2-6, 25, and 28, as stated above, Ponchel teaches an overlapping Al-Zn-Mg-Cu alloy composition. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in Ponchel because Ponchel finds that the prior art composition in the entire disclosed range has a suitable utility.

Concerning the particular aging steps of claims 9-10, Ponchel teaches aging, which overlaps the presently claimed aging temperature ranges and equivalent times.

Concerning claims 26, 27, 29, and 30, though Ponchel does not specify a metallurgical temper between two known temper designations, because Ponchel teaches ageing times and temperature ranges that overlap the presently claimed aging time and temperature ranges, then the metallurgical temper designation would necessarily be the same.

5. Claims 1-7, 9-12, 25-30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakai et al (US 6,048,415).

Art Unit: 1742

Nakai teaches a method of aging applicable to 7000 series alloys (column 7 lines 57-67, which broadly encompasses 7449), including 7055, to obtain an aerospace product (column 8 lines 41-42) with high strength and excellent corrosion resistance (column 3 lines 25-26, column 4 lines 45-48). Said aging treatment taught by Nakai includes: I) aging at 100-145°C for 5-50 hr, II) aging at 140-195°C for 0.5-30 hr, and III) aging at 100-145°C for 5-50 hr (abstract), which substantially overlaps the presently claimed time and temperature ranges. Said process taught by Nakai comprises a first and second aging steps that overlap those mentioned in claim 11, as well as a first, second, and third steps that overlap those mentioned in claim 12. Nakai teaches forming said alloys by casting, homogenizing, hot working, solution heat treatment, hardening, stretching (column 8 lines 20-37), followed by the above mentioned aging sequence.

Because Nakai teaches an multiple step aging process with steps that overlap the instant temperature and time ranges, performed on substantially the same Al-Zn-Mg-Cu aerospace alloy composition, thereby achieving excellent strength and improved corrosion resistance, it is held that Nakai has created a prima facie case of obviousness of the presently claimed invention.

Concerning claims 2-6, 25, and 28, as stated above, Nakai teaches an overlapping Al-Zn-Mg-Cu alloy composition. It would have been obvious to one of ordinary skill in the art to select any portion of range, including the claimed range, from the broader range disclosed in Nakai because Nakai finds that the prior art composition in the entire disclosed range has a suitable utility.

Concerning the particular aging steps of claims 9-10, Nakai teaches aging, which overlaps the presently claimed aging temperature ranges and equivalent times.



Concerning claims 26, 27, 29, and 30, though Nakai does not specify a metallurgical temper between two known temper designations, because Nakai teaches ageing times and temperature ranges that overlap the presently claimed aging time and temperature ranges, then the metallurgical temper designation would necessarily be the same.

***Response to Arguments/Amendments***

6. In the response filed on August 5, 2005, applicant amended claim 9, and submitted various arguments traversing the rejections of record. The examiner agrees that no new matter has been added.

7. The declaration filed on August 5, 2005 under 37 CFR 1.131 has been considered but is ineffective to overcome the Chakrabarti et al ( US 2002/0121319 A1) reference. The earliest effective filing date of Chakrabarti is Dec. 21, 2000 (wherein the provisional application was filed on said date). It is not clear that the invention disclosed and claimed in the present application was reduced to practice prior to this date.

8. Concerning applicant's argument that the prior art does not teach examples within the instant alloying ranges, patents are relevant as prior art for all they contain, and nonpreferred embodiments constitute prior art, MPEP 2123. Disclosed examples and preferred embodiments do not constitute a teaching away from a broader disclosure or nonpreferred embodiments. In re Susi, 440 F.2d 442, 169 USPQ 423 (CCPA 1971). "A known or obvious composition does not become patentable simply because it has been described as somewhat inferior to some other product for the same use." In re Gurley, 27 F.3d 551, 554, 31 USPQ2d 1130, 1132 (Fed. Cir. 1994) (The invention was directed to an epoxy impregnated fiber-reinforced printed circuit

Art Unit: 1742

material. The applied prior art reference taught a printed circuit material similar to that of the claims but impregnated with polyester-imide resin instead of epoxy. The reference, however, disclosed that epoxy was known for this use, but that epoxy impregnated circuit boards have "relatively acceptable dimensional stability" and "some degree of flexibility," but are inferior to circuit boards impregnated with polyester-imide resins. The court upheld the rejection concluding that applicant's argument that the reference teaches away from using epoxy was insufficient to overcome the rejection since "Gurley asserted no discovery beyond what was known in the art." 27 F.3d at 554, 31 USPQ2d at 1132.).

More specifically, though the examples and the preferred alloying range max. of 6.9% Zn taught by Ponchel does not overlap the presently claimed minimum of 7.0% Zn, the broad range taught by Ponchel is 5.9-8.2% Zn, which does overlap the presently claimed range of Zn. Additionally, Ponchel teaches maximizing compressive strength (see discussion above).

9. Applicant's argument that the present invention is allowable over the prior art of record because the compressive YS taught by Ponchel in Table II of 94.1 ksi is a typo has not been found persuasive. Applicant has not provided specific evidence supporting this assertion. Once a reference teaching product appearing to be substantially identical is made the basis of a rejection, and the examiner presents evidence or reasoning tending to show inherency, the burden shifts to the applicant to show an unobvious difference. "[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency' under 35 U.S.C. 102, on prima facie obviousness' under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted]." The burden of proof is similar to that

Art Unit: 1742


required with respect to product-by-process claims. In re Fitzgerald, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting In re Best, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)), see MPEP 2112. In re Schreiber, 128 F.3d 1473, 1478, 44 USPQ2d 1429, 1432 (Fed.Cir.1997). Applicant has not clearly shown an unobvious difference between the instant invention and the prior art's product.


### *Conclusion*

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janelle Combs-Morillo whose telephone number is (571) 272-1240. The examiner can normally be reached on 8:30 am- 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
JCM  
January 19, 2006

  
GEORGE WYSZOMIERSKI  
PRIMARY EXAMINER  
GROUP 1700